



# SEQUENCE LISTING

<110> Srivastava, Pramod

<120> COMPLEXES OF ALPHA (2) MACROGLOBULIN AND ANTIGENIC MOLECULES FOR IMMUNOTHERAPY

<130> 8449-178-999

<140> 09/873,403

<141> 2001-06-04

<150> 09/625,139

<151> 2000-07-25

<150> 60/209,266

<151> 2000-06-02

<160> 12

<170> PatentIn version 3.2

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Tyr	Asn	Arg	Thr	Val	Ser	Trp	Ala	Cys	Pro	His	Leu	Met	Lys	Leu	
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His	Lys	Asp	Asn	Thr	Thr	Cys	Tyr	Glu	Phe	Lys	Lys	Phe	Leu	Leu	
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Tyr	Ala	Arg	Gln	Met	Glu	Ile	Arg	Gly	Val	Asp	Leu	Asp	Ala	Pro	
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Tyr	Tyr	Asn	Tyr	Ile	Ile	Ser	Phe	Thr	Val	Pro	Asp	Ile	Asp	Asn	
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		1845					1850					1855			
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Pro	Val	Ser	Gly	Thr	Ser	Leu	Ala	Val	Gly	Ile	Asp	Phe	His	Ala	
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		2175					2180					2185			
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Ser	Trp	Thr	Cys	Asp	Lys	Glu	Asp	Asp	Cys	Glu	Asn	Gly	Glu	Asp							
		2715					2720					2725									
gag	acc	cac	tgc	aac	aag	ttc	tgc	tca	gag	gca	cag	ttc	gag	tgc	8667						
Glu	Thr	His	Cys	Asn	Lys	Phe	Cys	Ser	Glu	Ala	Gln	Phe	Glu	Cys							
		2730					2735					2740									
cag	aac	cac	cgg	tgt	atc	tcc	aag	cag	tgg	ctg	tgt	gac	ggt	agc	8712						
Gln	Asn	His	Arg	Cys	Ile	Ser	Lys	Gln	Trp	Leu	Cys	Asp	Gly	Ser							
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Asp	Asp	Cys	Gly	Asp	Gly	Ser	Asp	Glu	Ala	Ala	His	Cys	Glu	Gly							
		2760					2765					2770									
aag	aca	tgt	ggc	ccc	tcc	tcc	ttc	tcc	tgt	ccc	ggc	acc	cac	gtg	8802						
Lys	Thr	Cys	Gly	Pro	Ser	Ser	Phe	Ser	Cys	Pro	Gly	Thr	His	Val							
		2775					2780					2785									
tgt	gtc	cct	gag	cgc	tgg	ctc	tgt	gat	ggc	gac	aag	gac	tgt	acc	8847						
Cys	Val	Pro	Glu	Arg	Trp	Leu	Cys	Asp	Gly	Asp	Lys	Asp	Cys	Thr							
		2790					2795					2800									
gat	ggc	gcg	gat	gag	agt	gtc	act	gct	ggc	tgc	ctg	tac	aac	agc	8892						
Asp	Gly	Ala	Asp	Glu	Ser	Val	Thr	Ala	Gly	Cys	Leu	Tyr	Asn	Ser							
		2805					2810					2815									
acc	tgt	gat	gac	cgt	gag	ttc	atg	tgc	cag	aac	cgc	ttg	tgt	att	8937						
Thr	Cys	Asp	Asp	Arg	Glu	Phe	Met	Cys	Gln	Asn	Arg	Leu	Cys	Ile							
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Pro	Lys	His	Phe	Val	Cys	Asp	His	Asp	Arg	Asp	Cys	Ala	Asp	Gly							
		2835					2840					2845									
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Ser	Asp	Glu	Ser	Pro	Glu	Cys	Glu	Tyr	Pro	Thr	Cys	Gly	Pro	Asn							
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Glu Phe Arg Cys Ala Asn Gly Arg	Cys Leu Ser Ser Arg Gln Trp	
2865	2870 2875	
gaa tgt gat ggg gag aat gac tgt	cac gac cac agc gat gag gct	9117
Glu Cys Asp Gly Glu Asn Asp Cys	His Asp His Ser Asp Glu Ala	
2880	2885 2890	
ccc aag aac cca cac tgc acc agc	cca gag cac aaa tgc aat gcc	9162
Pro Lys Asn Pro His Cys Thr Ser	Pro Glu His Lys Cys Asn Ala	
2895	2900 2905	
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Ser Ser Gln Phe Leu Cys Ser Ser	Gly Arg Cys Val Ala Glu Ala	
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Leu Leu Cys Asn Gly Gln Asp Asp	Cys Gly Asp Gly Ser Asp Glu	
2925	2930 2935	
cgc ggg tgc cat gtc aac gag tgt	ctc agc cgc aag ctc agt ggc	9297
Arg Gly Cys His Val Asn Glu Cys	Leu Ser Arg Lys Leu Ser Gly	
2940	2945 2950	
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Cys Ser Gln Asp Cys Glu Asp Leu	Lys Ile Gly Phe Lys Cys Arg	
2955	2960 2965	
tgt cgc ccg ggc ttc cgg cta aag	gac gat ggc agg acc tgt gcc	9387
Cys Arg Pro Gly Phe Arg Leu Lys	Asp Asp Gly Arg Thr Cys Ala	
2970	2975 2980	
gac ctg gat gag tgc agc acc acc	ttc ccc tgc agc cag ctc tgc	9432
Asp Leu Asp Glu Cys Ser Thr Thr	Phe Pro Cys Ser Gln Leu Cys	
2985	2990 2995	
atc aac acc cac gga agt tac aag	tgt ctg tgt gtg gag ggc tat	9477
Ile Asn Thr His Gly Ser Tyr Lys	Cys Leu Cys Val Glu Gly Tyr	
3000	3005 3010	
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Ala Pro Arg Gly Gly Asp Pro His	Ser Cys Lys Ala Val Thr Asp	
3015	3020 3025	
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Glu Glu Pro Phe Leu Ile Phe Ala	Asn Arg Tyr Tyr Leu Arg Lys	
3030	3035 3040	
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Leu Asn Leu Asp Gly Ser Asn Tyr	Thr Leu Leu Lys Gln Gly Leu	
3045	3050 3055	
aac aat gcg gtc gcc ttg gca ttt	gac tac cga gag cag atg atc	9657
Asn Asn Ala Val Ala Leu Ala Phe	Asp Tyr Arg Glu Gln Met Ile	
3060	3065 3070	
tac tgg acg ggc gtg acc acc cag	ggc agc atg att cgc agg atg	9702
Tyr Trp Thr Gly Val Thr Thr Gln	Gly Ser Met Ile Arg Arg Met	
3075	3080 3085	

cac ctc aac ggc agc aac gtg cag gtt ctg cac cgg acg ggc ctt His Leu Asn Gly Ser Asn Val Gln Val Leu His Arg Thr Gly Leu 3090 3095 3100	9747
agt aac cca gat ggg ctc gct gtg gac tgg gtg ggt ggc aac ctg Ser Asn Pro Asp Gly Leu Ala Val Asp Trp Val Gly Gly Asn Leu 3105 3110 3115	9792
tac tgg tgt gac aag ggc aga gat acc att gag gtg tcc aag ctt Tyr Trp Cys Asp Lys Gly Arg Asp Thr Ile Glu Val Ser Lys Leu 3120 3125 3130	9837
aac ggg gcc tat cgg aca gtg ctg gtc agc tct ggc ctc cgg gag Asn Gly Ala Tyr Arg Thr Val Leu Val Ser Ser Gly Leu Arg Glu 3135 3140 3145	9882
ccc aga gct ctg gta gtg gat gta cag aat ggg tac ctg tac tgg Pro Arg Ala Leu Val Val Asp Val Gln Asn Gly Tyr Leu Tyr Trp 3150 3155 3160	9927
aca gac tgg ggt gac cac tca ctg atc ggc cgg att ggc atg gat Thr Asp Trp Gly Asp His Ser Leu Ile Gly Arg Ile Gly Met Asp 3165 3170 3175	9972
gga tct ggc cgc agc atc atc gtg gac act aag atc aca tgg ccc Gly Ser Gly Arg Ser Ile Ile Val Asp Thr Lys Ile Thr Trp Pro 3180 3185 3190	10017
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gac gcc cgt gag gac tac atc gag ttc gcc agc ctg gat ggc tcc Asp Ala Arg Glu Asp Tyr Ile Glu Phe Ala Ser Leu Asp Gly Ser 3210 3215 3220	10107
aac cgt cac gtt gtg ctg agc caa gac atc cca cac atc ttt gcg Asn Arg His Val Val Leu Ser Gln Asp Ile Pro His Ile Phe Ala 3225 3230 3235	10152
ctg acc cta ttt gaa gac tac gtc tac tgg aca gac tgg gaa acg Leu Thr Leu Phe Glu Asp Tyr Val Tyr Trp Thr Asp Trp Glu Thr 3240 3245 3250	10197
aag tcc atc aac cgg gcc cac aag acc acg ggt gcc aac aaa aca Lys Ser Ile Asn Arg Ala His Lys Thr Thr Gly Ala Asn Lys Thr 3255 3260 3265	10242
ctc ctc atc agc acc ctg cac cgg ccc atg gac tta cat gta ttc Leu Leu Ile Ser Thr Leu His Arg Pro Met Asp Leu His Val Phe 3270 3275 3280	10287
cac gcc ctg cgc cag cca gat gtg ccc aat cac ccc tgc aaa gtc His Ala Leu Arg Gln Pro Asp Val Pro Asn His Pro Cys Lys Val 3285 3290 3295	10332
aac aat ggt ggc tgc agc aac ctg tgc ctg ctg tcc cct ggg ggt Asn Asn Gly Gly Cys Ser Asn Leu Cys Leu Leu Ser Pro Gly Gly 3300 3305 3310	10377
ggt cac aag tgc gcc tgc ccc acc aac ttc tat ctg ggt ggc gat	10422



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Gly	Arg	Thr	Cys	Val	Ser	Asn	Cys	Thr	Ala	Ser	Gln	Phe	Val	Cys	
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Lys	Asn	Asp	Lys	Cys	Ile	Pro	Phe	Trp	Trp	Lys	Cys	Asp	Thr	Glu	
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Asp	Asp	Cys	Gly	Asp	His	Ser	Asp	Glu	Pro	Pro	Asp	Cys	Pro	Glu	
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Phe	Lys	Cys	Arg	Pro	Gly	Gln	Phe	Gln	Cys	Ser	Thr	Gly	Ile	Cys	
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Thr	Asn	Pro	Ala	Phe	Ile	Cys	Asp	Gly	Asp	Asn	Asp	Cys	Gln	Asp	
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Asn	Ser	Asp	Glu	Ala	Asn	Cys	Asp	Ile	His	Val	Cys	Leu	Pro	Ser	
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Gln	Phe	Lys	Cys	Thr	Asn	Thr	Asn	Arg	Cys	Ile	Pro	Gly	Ile	Phe	
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Asp	Cys	Pro	Glu	Val	Thr	Cys	Ala	Pro	Asn	Gln	Phe	Gln	Cys	Ser	
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Ile	Thr	Lys	Arg	Cys	Ile	Pro	Arg	Val	Trp	Val	Cys	Asp	Arg	Asp	
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Asn	His	Cys	Val	Asp	Gly	Ser	Asp	Glu	Pro	Ala	Asn	Cys	Thr	Gln	
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Cys	Ile	Pro	Ala	Arg	Trp	Lys	Cys	Asp	Gly	Glu	Asp	Asp	Cys	Gly	
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Asp	Gly	Ser	Asp	Glu	Pro	Lys	Glu	Glu	Cys	Asp	Glu	Arg	Thr	Cys	
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Glu	Pro	Tyr	Gln	Phe	Arg	Cys	Lys	Asn	Asn	Arg	Cys	Val	Pro	Gly	

3540			3545			3550									
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Arg	Trp	Gln	Cys	Asp	Tyr	Asp	Asn	Asp	Cys	Gly	Asp	Asn	Ser	Asp	
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Glu	Glu	Ser	Cys	Thr	Pro	Arg	Pro	Cys	Ser	Glu	Ser	Glu	Phe	Phe	
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Cys	Ala	Asn	Gly	Arg	Cys	Ile	Ala	Gly	Arg	Trp	Lys	Cys	Asp	Gly	
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Arg	Cys	Asp	Met	Asp	Gln	Phe	Gln	Cys	Lys	Ser	Gly	His	Cys	Ile	
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Pro	Leu	Arg	Trp	Pro	Cys	Asp	Ala	Asp	Ala	Asp	Cys	Met	Asp	Gly	
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Ser	Asp	Glu	Glu	Ala	Cys	Gly	Thr	Gly	Val	Arg	Thr	Cys	Pro	Leu	
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Lys	Cys	Asp	Gly	Glu	Asp	Asp	Cys	Gly	Asp	Asn	Ser	Asp	Glu	Asn	
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Asp	Gly	Val	Asp	Asn	Cys	Gly	Asp	Gly	Thr	Asp	Glu	Glu	Asp	Cys	
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Glu	Pro	Pro	Thr	Ala	Gln	Asn	Pro	His	Cys	Lys	Asp	Lys	Lys	Glu	
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Phe	Leu	Cys	Arg	Asn	Gln	Arg	Cys	Leu	Ser	Ser	Ser	Leu	Arg	Cys	
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Asn	Met	Phe	Asp	Asp	Cys	Gly	Asp	Gly	Ser	Asp	Glu	Glu	Asp	Cys	
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tgt ggg gac Cys Gly Asp 3795	gaa gct cgt Glu Ala Arg	tgt gtg Cys Val 3800	cgc act gag Arg Thr Glu	aaa gct Lys Ala 3805	gcc tac Ala Tyr	11862
tgt gcc tgc Cys Ala Cys 3810	cgc tcg ggc Arg Ser Gly	ttc cat Phe His 3815	act gtg ccg Thr Val Pro	ggc cag Gly Gln 3820	ccc gga Pro Gly	11907
tgc cag gac Cys Gln Asp 3825	atc aac gag Ile Asn Glu	tgc ctg Cys Leu 3830	cgc ttt ggt Arg Phe Gly	acc tgc Thr Cys 3835	tct cag Ser Gln	11952
ctc tgg aac Leu Trp Asn 3840	aaa ccc aag Lys Pro Lys	gga ggc Gly Gly 3845	cac ctc tgc His Leu Cys	agc tgt Ser Cys 3850	gcc cgc Ala Arg	11997
aac ttc atg Asn Phe Met 3855	aag aca cac Lys Thr His	aac acc Asn Thr 3860	tgc aaa gct Cys Lys Ala	gaa ggc Glu Gly 3865	tcc gag Ser Glu	12042
tac cag gtg Tyr Gln Val 3870	cta tac atc Leu Tyr Ile	gcg gat Ala Asp 3875	gac aac gag Asp Asn Glu	atc cgc Ile Arg 3880	agc ttg Ser Leu	12087
ttc ccg ggc Phe Pro Gly 3885	cac ccc cac His Pro His	tca gcc Ser Ala 3890	tac gag cag Tyr Glu Gln	aca ttc Thr Phe 3895	cag ggc Gln Gly	12132
gat gag agt Asp Glu Ser 3900	gtc cgc ata Val Arg Ile	gat gcc Asp Ala 3905	atg gat gtc Met Asp Val	cat gtc His Val 3910	aag gcc Lys Ala	12177
ggc cgt gtc Gly Arg Val 3915	tac tgg act Tyr Trp Thr	aac tgg Asn Trp 3920	cac acg ggc His Thr Gly	aca atc Thr Ile 3925	tcc tac Ser Tyr	12222
agg agc ctg Arg Ser Leu 3930	ccc cct gcc Pro Pro Ala	gcc cct Ala Pro 3935	cct acc act Pro Thr Thr	tcc aac Ser Asn 3940	cgc cac Arg His	12267
cgg agg cag Arg Arg Gln 3945	atc gac cgg Ile Asp Arg	ggc gtc Gly Val 3950	acc cac ctc Thr His Leu	aat att Asn Ile 3955	tca ggc Ser Gly	12312
ctg aag atg Leu Lys Met 3960	ccg agg ggt Pro Arg Gly	atc gct Ile Ala 3965	atc gac tgg Ile Asp Trp	gtg gcc Val Ala 3970	ggg aat Gly Asn	12357
gtg tac tgg Val Tyr Trp 3975	acc gat tcc Thr Asp Ser	ggc cga Gly Arg 3980	gac gtg att Asp Val Ile	gag gtg Glu Val 3985	gcg caa Ala Gln	12402
atg aag ggc Met Lys Gly 3990	gag aac cgc Glu Asn Arg	aag acg Lys Thr 3995	ctc atc tcg Leu Ile Ser	ggc atg Gly Met 4000	att gat Ile Asp	12447

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Trp	Ser	Asp	Trp	Gly	Asn	His	Pro	Lys	Ile	Glu	Thr	Ala	Ala	Met	
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Pro	Thr	Gly	Leu	Ala	Val	Asp	Tyr	His	Asn	Glu	Arg	Leu	Tyr	Trp	
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Ala	Asp	Ala	Lys	Leu	Ser	Val	Ile	Gly	Ser	Ile	Arg	Leu	Asn	Gly	
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Thr	Asp	Pro	Ile	Val	Ala	Ala	Asp	Ser	Lys	Arg	Gly	Leu	Ser	His	
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Pro	Phe	Ser	Ile	Asp	Val	Phe	Glu	Asp	Tyr	Ile	Tyr	Gly	Val	Thr	
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Tyr	Ile	Asn	Asn	Arg	Val	Phe	Lys	Ile	His	Lys	Phe	Gly	His	Ser	
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Pro	Leu	Tyr	Asn	Leu	Thr	Gly	Gly	Leu	Ser	His	Ala	Ser	Asp	Val	
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gtc	ctt	tac	cat	caa	cac	aag	cag	cct	gaa	gtg	acc	aac	ccc	tgt	12897
Val	Leu	Tyr	His	Gln	His	Lys	Gln	Pro	Glu	Val	Thr	Asn	Pro	Cys	
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gac	cgc	aag	aaa	tgc	gaa	tgg	ctg	tgt	ctg	ctg	agc	ccc	agc	ggg	12942
Asp	Arg	Lys	Lys	Cys	Glu	Trp	Leu	Cys	Leu	Leu	Ser	Pro	Ser	Gly	
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cct	gtc	tgc	acc	tgt	ccc	aat	gga	aag	agg	ctg	gat	aat	ggc	acc	12987
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Arg Gly Lys Leu Tyr Trp Thr 1715 1720	Asp Gly Asp Asn Ile 1725	Ser Met Ala
Asn Met Asp Gly Ser Asn His 1730 1735	Thr Leu Leu Phe Ser 1740	Gly Gln Lys
Gly Pro Val Gly Leu Ala Ile 1745 1750	Asp Phe Pro Glu Ser 1755	Lys Leu Tyr
Trp Ile Ser Ser Gly Asn His 1760 1765	Thr Ile Asn Arg Cys 1770	Asn Leu Asp
Gly Ser Glu Leu Glu Val Ile 1775 1780	Asp Thr Met Arg Ser 1785	Gln Leu Gly
Lys Ala Thr Ala Leu Ala Ile 1790 1795	Met Gly Asp Lys Leu 1800	Trp Trp Ala
Asp Gln Val Ser Glu Lys Met 1805 1810	Gly Thr Cys Asn Lys 1815	Ala Asp Gly
Ser Gly Ser Val Val Leu Arg 1820 1825	Asn Ser Thr Thr Leu 1830	Val Met His
Met Lys Val Tyr Asp Glu Ser 1835 1840	Ile Gln Leu Glu His 1845	Glu Gly Thr
Asn Pro Cys Ser Val Asn Asn 1850 1855	Gly Asp Cys Ser Gln 1860	Leu Cys Leu
Pro Thr Ser Glu Thr Thr Arg 1865 1870	Ser Cys Met Cys Thr 1875	Ala Gly Tyr
Ser Leu Arg Ser Gly Gln Gln 1880 1885	Ala Cys Glu Gly Val 1890	Gly Ser Phe

Leu	Leu	Tyr	Ser	Val	His	Glu	Gly	Ile	Arg	Gly	Ile	Pro	Leu	Asp
1895						1900					1905			
Pro	Asn	Asp	Lys	Ser	Asp	Ala	Leu	Val	Pro	Val	Ser	Gly	Thr	Ser
1910						1915					1920			
Leu	Ala	Val	Gly	Ile	Asp	Phe	His	Ala	Glu	Asn	Asp	Thr	Ile	Tyr
1925						1930					1935			
Trp	Val	Asp	Met	Gly	Leu	Ser	Thr	Ile	Ser	Arg	Ala	Lys	Arg	Asp
1940						1945					1950			
Gln	Thr	Trp	Arg	Glu	Asp	Val	Val	Thr	Asn	Gly	Ile	Gly	Arg	Val
1955						1960					1965			
Glu	Gly	Ile	Ala	Val	Asp	Trp	Ile	Ala	Gly	Asn	Ile	Tyr	Trp	Thr
1970						1975					1980			
Asp	Gln	Gly	Phe	Asp	Val	Ile	Glu	Val	Ala	Arg	Leu	Asn	Gly	Ser
1985						1990					1995			
Phe	Arg	Tyr	Val	Val	Ile	Ser	Gln	Gly	Leu	Asp	Lys	Pro	Arg	Ala
2000						2005					2010			
Ile	Thr	Val	His	Pro	Glu	Lys	Gly	Tyr	Leu	Phe	Trp	Thr	Glu	Trp
2015						2020					2025			
Gly	His	Tyr	Pro	Arg	Ile	Glu	Arg	Ser	Arg	Leu	Asp	Gly	Thr	Glu
2030						2035					2040			
Arg	Val	Val	Leu	Val	Asn	Val	Ser	Ile	Ser	Trp	Pro	Asn	Gly	Ile
2045						2050					2055			
Ser	Val	Asp	Tyr	Gln	Gly	Gly	Lys	Leu	Tyr	Trp	Cys	Asp	Ala	Arg
2060						2065					2070			
Met	Asp	Lys	Ile	Glu	Arg	Ile	Asp	Leu	Glu	Thr	Gly	Glu	Asn	Arg
2075						2080					2085			
Glu	Val	Val	Leu	Ser	Ser	Asn	Asn	Met	Asp	Met	Phe	Ser	Val	Ser
2090						2095					2100			
Val	Phe	Glu	Asp	Phe	Ile	Tyr	Trp	Ser	Asp	Arg	Thr	His	Ala	Asn
2105						2110					2115			
Gly	Ser	Ile	Lys	Arg	Gly	Cys	Lys	Asp	Asn	Ala	Thr	Asp	Ser	Val
2120						2125					2130			
Pro	Leu	Arg	Thr	Gly	Ile	Gly	Val	Gln	Leu	Lys	Asp	Ile	Lys	Val
2135						2140					2145			
Phe	Asn	Arg	Asp	Arg	Gln	Lys	Gly	Thr	Asn	Val	Cys	Ala	Val	Ala
2150						2155					2160			
Asn	Gly	Gly	Cys	Gln	Gln	Leu	Cys	Leu	Tyr	Arg	Gly	Gly	Gly	Gln
2165						2170					2175			
Arg	Ala	Cys	Ala	Cys	Ala	His	Gly	Met	Leu	Ala	Glu	Asp	Gly	Ala
2180						2185					2190			

Ser	Cys	Arg	Glu	Tyr	Ala	Gly	Tyr	Leu	Leu	Tyr	Ser	Glu	Arg	Thr
2195						2200					2205			
Ile	Leu	Lys	Ser	Ile	His	Leu	Ser	Asp	Glu	Arg	Asn	Leu	Asn	Ala
2210						2215					2220			
Pro	Val	Gln	Pro	Phe	Glu	Asp	Pro	Glu	His	Met	Lys	Asn	Val	Ile
2225						2230					2235			
Ala	Leu	Ala	Phe	Asp	Tyr	Arg	Ala	Gly	Thr	Ser	Pro	Gly	Thr	Pro
2240						2245					2250			
Asn	Arg	Ile	Phe	Phe	Ser	Asp	Ile	His	Phe	Gly	Asn	Ile	Gln	Gln
2255						2260					2265			
Ile	Asn	Asp	Asp	Gly	Ser	Gly	Arg	Thr	Thr	Ile	Val	Glu	Asn	Val
2270						2275					2280			
Gly	Ser	Val	Glu	Gly	Leu	Ala	Tyr	His	Arg	Gly	Trp	Asp	Thr	Leu
2285						2290					2295			
Tyr	Trp	Thr	Ser	Tyr	Thr	Thr	Ser	Thr	Ile	Thr	Arg	His	Thr	Val
2300						2305					2310			
Asp	Gln	Thr	Arg	Pro	Gly	Ala	Phe	Glu	Arg	Glu	Thr	Val	Ile	Thr
2315						2320					2325			
Met	Ser	Gly	Asp	Asp	His	Pro	Arg	Ala	Phe	Val	Leu	Asp	Glu	Cys
2330						2335					2340			
Gln	Asn	Leu	Met	Phe	Trp	Thr	Asn	Trp	Asn	Glu	Leu	His	Pro	Ser
2345						2350					2355			
Ile	Met	Arg	Ala	Ala	Leu	Ser	Gly	Ala	Asn	Val	Leu	Thr	Leu	Ile
2360						2365					2370			
Glu	Lys	Asp	Ile	Arg	Thr	Pro	Asn	Gly	Leu	Ala	Ile	Asp	His	Arg
2375						2380					2385			
Ala	Glu	Lys	Leu	Tyr	Phe	Ser	Asp	Ala	Thr	Leu	Asp	Lys	Ile	Glu
2390						2395					2400			
Arg	Cys	Glu	Tyr	Asp	Gly	Ser	His	Arg	Tyr	Val	Ile	Leu	Lys	Ser
2405						2410					2415			
Glu	Pro	Val	His	Pro	Phe	Gly	Leu	Ala	Val	Tyr	Gly	Glu	His	Ile
2420						2425					2430			
Phe	Trp	Thr	Asp	Trp	Val	Arg	Arg	Ala	Val	Gln	Arg	Ala	Asn	Lys
2435						2440					2445			
Tyr	Val	Gly	Ser	Asp	Met	Lys	Leu	Leu	Arg	Val	Asp	Ile	Pro	Gln
2450						2455					2460			
Gln	Pro	Met	Gly	Ile	Ile	Ala	Val	Ala	Asn	Asp	Thr	Asn	Ser	Cys
2465						2470					2475			
Glu	Leu	Ser	Pro	Cys	Arg	Ile	Asn	Asn	Gly	Gly	Cys	Gln	Asp	Leu
2480						2485					2490			
Cys	Leu	Leu	Thr	His	Gln	Gly	His	Val	Asn	Cys	Ser	Cys	Arg	Gly



2495						2500						2505			
Gly	Arg	Ile	Leu	Gln	Glu	Asp	Phe	Thr	Cys	Arg	Ala	Val	Asn	Ser	
2510						2515					2520				
Ser	Cys	Arg	Ala	Gln	Asp	Glu	Phe	Glu	Cys	Ala	Asn	Gly	Glu	Cys	
2525						2530					2535				
Ile	Ser	Phe	Ser	Leu	Thr	Cys	Asp	Gly	Val	Ser	His	Cys	Lys	Asp	
2540						2545					2550				
Lys	Ser	Asp	Glu	Lys	Pro	Ser	Tyr	Cys	Asn	Ser	Arg	Arg	Cys	Lys	
2555						2560					2565				
Lys	Thr	Phe	Arg	Gln	Cys	Asn	Asn	Gly	Arg	Cys	Val	Ser	Asn	Met	
2570						2575					2580				
Leu	Trp	Cys	Asn	Gly	Val	Asp	Tyr	Cys	Gly	Asp	Gly	Ser	Asp	Glu	
2585						2590					2595				
Ile	Pro	Cys	Asn	Lys	Thr	Ala	Cys	Gly	Val	Gly	Glu	Phe	Arg	Cys	
2600						2605					2610				
Arg	Asp	Gly	Ser	Cys	Ile	Gly	Asn	Ser	Ser	Arg	Cys	Asn	Gln	Phe	
2615						2620					2625				
Val	Asp	Cys	Glu	Asp	Ala	Ser	Asp	Glu	Met	Asn	Cys	Ser	Ala	Thr	
2630						2635					2640				
Asp	Cys	Ser	Ser	Tyr	Phe	Arg	Leu	Gly	Val	Lys	Gly	Val	Leu	Phe	
2645						2650					2655				
Gln	Pro	Cys	Glu	Arg	Thr	Ser	Leu	Cys	Tyr	Ala	Pro	Ser	Trp	Val	
2660						2665					2670				
Cys	Asp	Gly	Ala	Asn	Asp	Cys	Gly	Asp	Tyr	Ser	Asp	Glu	Arg	Asp	
2675						2680					2685				
Cys	Pro	Gly	Val	Lys	Arg	Pro	Arg	Cys	Pro	Leu	Asn	Tyr	Phe	Ala	
2690						2695					2700				
Cys	Pro	Ser	Gly	Arg	Cys	Ile	Pro	Met	Ser	Trp	Thr	Cys	Asp	Lys	
2705						2710					2715				
Glu	Asp	Asp	Cys	Glu	Asn	Gly	Glu	Asp	Glu	Thr	His	Cys	Asn	Lys	
2720						2725					2730				
Phe	Cys	Ser	Glu	Ala	Gln	Phe	Glu	Cys	Gln	Asn	His	Arg	Cys	Ile	
2735						2740					2745				
Ser	Lys	Gln	Trp	Leu	Cys	Asp	Gly	Ser	Asp	Asp	Cys	Gly	Asp	Gly	
2750						2755					2760				
Ser	Asp	Glu	Ala	Ala	His	Cys	Glu	Gly	Lys	Thr	Cys	Gly	Pro	Ser	
2765						2770					2775				
Ser	Phe	Ser	Cys	Pro	Gly	Thr	His	Val	Cys	Val	Pro	Glu	Arg	Trp	
2780						2785					2790				
Leu	Cys	Asp	Gly	Asp	Lys	Asp	Cys	Thr	Asp	Gly	Ala	Asp	Glu	Ser	
2795						2800					2805				

Val	Thr	Ala	Gly	Cys	Leu	Tyr	Asn	Ser	Thr	Cys	Asp	Asp	Arg	Glu
	2810					2815					2820			
Phe	Met	Cys	Gln	Asn	Arg	Leu	Cys	Ile	Pro	Lys	His	Phe	Val	Cys
	2825					2830					2835			
Asp	His	Asp	Arg	Asp	Cys	Ala	Asp	Gly	Ser	Asp	Glu	Ser	Pro	Glu
	2840					2845					2850			
Cys	Glu	Tyr	Pro	Thr	Cys	Gly	Pro	Asn	Glu	Phe	Arg	Cys	Ala	Asn
	2855					2860					2865			
Gly	Arg	Cys	Leu	Ser	Ser	Arg	Gln	Trp	Glu	Cys	Asp	Gly	Glu	Asn
	2870					2875					2880			
Asp	Cys	His	Asp	His	Ser	Asp	Glu	Ala	Pro	Lys	Asn	Pro	His	Cys
	2885					2890					2895			
Thr	Ser	Pro	Glu	His	Lys	Cys	Asn	Ala	Ser	Ser	Gln	Phe	Leu	Cys
	2900					2905					2910			
Ser	Ser	Gly	Arg	Cys	Val	Ala	Glu	Ala	Leu	Leu	Cys	Asn	Gly	Gln
	2915					2920					2925			
Asp	Asp	Cys	Gly	Asp	Gly	Ser	Asp	Glu	Arg	Gly	Cys	His	Val	Asn
	2930					2935					2940			
Glu	Cys	Leu	Ser	Arg	Lys	Leu	Ser	Gly	Cys	Ser	Gln	Asp	Cys	Glu
	2945					2950					2955			
Asp	Leu	Lys	Ile	Gly	Phe	Lys	Cys	Arg	Cys	Arg	Pro	Gly	Phe	Arg
	2960					2965					2970			
Leu	Lys	Asp	Asp	Gly	Arg	Thr	Cys	Ala	Asp	Leu	Asp	Glu	Cys	Ser
	2975					2980					2985			
Thr	Thr	Phe	Pro	Cys	Ser	Gln	Leu	Cys	Ile	Asn	Thr	His	Gly	Ser
	2990					2995					3000			
Tyr	Lys	Cys	Leu	Cys	Val	Glu	Gly	Tyr	Ala	Pro	Arg	Gly	Gly	Asp
	3005					3010					3015			
Pro	His	Ser	Cys	Lys	Ala	Val	Thr	Asp	Glu	Glu	Pro	Phe	Leu	Ile
	3020					3025					3030			
Phe	Ala	Asn	Arg	Tyr	Tyr	Leu	Arg	Lys	Leu	Asn	Leu	Asp	Gly	Ser
	3035					3040					3045			
Asn	Tyr	Thr	Leu	Leu	Lys	Gln	Gly	Leu	Asn	Asn	Ala	Val	Ala	Leu
	3050					3055					3060			
Ala	Phe	Asp	Tyr	Arg	Glu	Gln	Met	Ile	Tyr	Trp	Thr	Gly	Val	Thr
	3065					3070					3075			
Thr	Gln	Gly	Ser	Met	Ile	Arg	Arg	Met	His	Leu	Asn	Gly	Ser	Asn
	3080					3085					3090			
Val	Gln	Val	Leu	His	Arg	Thr	Gly	Leu	Ser	Asn	Pro	Asp	Gly	Leu
	3095					3100					3105			

Ala	Val	Asp	Trp	Val	Gly	Gly	Asn	Leu	Tyr	Trp	Cys	Asp	Lys	Gly
	3110					3115					3120			
Arg	Asp	Thr	Ile	Glu	Val	Ser	Lys	Leu	Asn	Gly	Ala	Tyr	Arg	Thr
	3125					3130					3135			
Val	Leu	Val	Ser	Ser	Gly	Leu	Arg	Glu	Pro	Arg	Ala	Leu	Val	Val
	3140					3145					3150			
Asp	Val	Gln	Asn	Gly	Tyr	Leu	Tyr	Trp	Thr	Asp	Trp	Gly	Asp	His
	3155					3160					3165			
Ser	Leu	Ile	Gly	Arg	Ile	Gly	Met	Asp	Gly	Ser	Gly	Arg	Ser	Ile
	3170					3175					3180			
Ile	Val	Asp	Thr	Lys	Ile	Thr	Trp	Pro	Asn	Gly	Leu	Thr	Val	Asp
	3185					3190					3195			
Tyr	Val	Thr	Glu	Arg	Ile	Tyr	Trp	Ala	Asp	Ala	Arg	Glu	Asp	Tyr
	3200					3205					3210			
Ile	Glu	Phe	Ala	Ser	Leu	Asp	Gly	Ser	Asn	Arg	His	Val	Val	Leu
	3215					3220					3225			
Ser	Gln	Asp	Ile	Pro	His	Ile	Phe	Ala	Leu	Thr	Leu	Phe	Glu	Asp
	3230					3235					3240			
Tyr	Val	Tyr	Trp	Thr	Asp	Trp	Glu	Thr	Lys	Ser	Ile	Asn	Arg	Ala
	3245					3250					3255			
His	Lys	Thr	Thr	Gly	Ala	Asn	Lys	Thr	Leu	Leu	Ile	Ser	Thr	Leu
	3260					3265					3270			
His	Arg	Pro	Met	Asp	Leu	His	Val	Phe	His	Ala	Leu	Arg	Gln	Pro
	3275					3280					3285			
Asp	Val	Pro	Asn	His	Pro	Cys	Lys	Val	Asn	Asn	Gly	Gly	Cys	Ser
	3290					3295					3300			
Asn	Leu	Cys	Leu	Leu	Ser	Pro	Gly	Gly	Gly	His	Lys	Cys	Ala	Cys
	3305					3310					3315			
Pro	Thr	Asn	Phe	Tyr	Leu	Gly	Gly	Asp	Gly	Arg	Thr	Cys	Val	Ser
	3320					3325					3330			
Asn	Cys	Thr	Ala	Ser	Gln	Phe	Val	Cys	Lys	Asn	Asp	Lys	Cys	Ile
	3335					3340					3345			
Pro	Phe	Trp	Trp	Lys	Cys	Asp	Thr	Glu	Asp	Asp	Cys	Gly	Asp	His
	3350					3355					3360			
Ser	Asp	Glu	Pro	Pro	Asp	Cys	Pro	Glu	Phe	Lys	Cys	Arg	Pro	Gly
	3365					3370					3375			
Gln	Phe	Gln	Cys	Ser	Thr	Gly	Ile	Cys	Thr	Asn	Pro	Ala	Phe	Ile
	3380					3385					3390			
Cys	Asp	Gly	Asp	Asn	Asp	Cys	Gln	Asp	Asn	Ser	Asp	Glu	Ala	Asn
	3395					3400					3405			
Cys	Asp	Ile	His	Val	Cys	Leu	Pro	Ser	Gln	Phe	Lys	Cys	Thr	Asn

3410						3415						3420			
Thr	Asn	Arg	Cys	Ile	Pro	Gly	Ile	Phe	Arg	Cys	Asn	Gly	Gln	Asp	
3425						3430					3435				
Asn	Cys	Gly	Asp	Gly	Glu	Asp	Glu	Arg	Asp	Cys	Pro	Glu	Val	Thr	
3440						3445					3450				
Cys	Ala	Pro	Asn	Gln	Phe	Gln	Cys	Ser	Ile	Thr	Lys	Arg	Cys	Ile	
3455						3460					3465				
Pro	Arg	Val	Trp	Val	Cys	Asp	Arg	Asp	Asn	His	Cys	Val	Asp	Gly	
3470						3475					3480				
Ser	Asp	Glu	Pro	Ala	Asn	Cys	Thr	Gln	Met	Thr	Cys	Gly	Val	Asp	
3485						3490					3495				
Glu	Phe	Arg	Cys	Lys	Asp	Ser	Gly	Arg	Cys	Ile	Pro	Ala	Arg	Trp	
3500						3505					3510				
Lys	Cys	Asp	Gly	Glu	Asp	Asp	Cys	Gly	Asp	Gly	Ser	Asp	Glu	Pro	
3515						3520					3525				
Lys	Glu	Glu	Cys	Asp	Glu	Arg	Thr	Cys	Glu	Pro	Tyr	Gln	Phe	Arg	
3530						3535					3540				
Cys	Lys	Asn	Asn	Arg	Cys	Val	Pro	Gly	Arg	Trp	Gln	Cys	Asp	Tyr	
3545						3550					3555				
Asp	Asn	Asp	Cys	Gly	Asp	Asn	Ser	Asp	Glu	Glu	Ser	Cys	Thr	Pro	
3560						3565					3570				
Arg	Pro	Cys	Ser	Glu	Ser	Glu	Phe	Phe	Cys	Ala	Asn	Gly	Arg	Cys	
3575						3580					3585				
Ile	Ala	Gly	Arg	Trp	Lys	Cys	Asp	Gly	Asp	His	Asp	Cys	Ala	Asp	
3590						3595					3600				
Gly	Ser	Asp	Glu	Lys	Asp	Cys	Thr	Pro	Arg	Cys	Asp	Met	Asp	Gln	
3605						3610					3615				
Phe	Gln	Cys	Lys	Ser	Gly	His	Cys	Ile	Pro	Leu	Arg	Trp	Pro	Cys	
3620						3625					3630				
Asp	Ala	Asp	Ala	Asp	Cys	Met	Asp	Gly	Ser	Asp	Glu	Glu	Ala	Cys	
3635						3640					3645				
Gly	Thr	Gly	Val	Arg	Thr	Cys	Pro	Leu	Asp	Glu	Phe	Gln	Cys	Asn	
3650						3655					3660				
Asn	Thr	Leu	Cys	Lys	Pro	Leu	Ala	Trp	Lys	Cys	Asp	Gly	Glu	Asp	
3665						3670					3675				
Asp	Cys	Gly	Asp	Asn	Ser	Asp	Glu	Asn	Pro	Glu	Glu	Cys	Ala	Arg	
3680						3685					3690				
Phe	Ile	Cys	Pro	Pro	Asn	Arg	Pro	Phe	Arg	Cys	Lys	Asn	Asp	Arg	
3695						3700					3705				
Val	Cys	Leu	Trp	Ile	Gly	Arg	Gln	Cys	Asp	Gly	Val	Asp	Asn	Cys	
3710						3715					3720				

Gly	Asp	Gly	Thr	Asp	Glu	Glu	Asp	Cys	Glu	Pro	Pro	Thr	Ala	Gln
3725						3730					3735			
Asn	Pro	His	Cys	Lys	Asp	Lys	Lys	Glu	Phe	Leu	Cys	Arg	Asn	Gln
3740						3745					3750			
Arg	Cys	Leu	Ser	Ser	Ser	Leu	Arg	Cys	Asn	Met	Phe	Asp	Asp	Cys
3755						3760					3765			
Gly	Asp	Gly	Ser	Asp	Glu	Glu	Asp	Cys	Ser	Ile	Asp	Pro	Lys	Leu
3770						3775					3780			
Thr	Ser	Cys	Ala	Thr	Asn	Ala	Ser	Met	Cys	Gly	Asp	Glu	Ala	Arg
3785						3790					3795			
Cys	Val	Arg	Thr	Glu	Lys	Ala	Ala	Tyr	Cys	Ala	Cys	Arg	Ser	Gly
3800						3805					3810			
Phe	His	Thr	Val	Pro	Gly	Gln	Pro	Gly	Cys	Gln	Asp	Ile	Asn	Glu
3815						3820					3825			
Cys	Leu	Arg	Phe	Gly	Thr	Cys	Ser	Gln	Leu	Trp	Asn	Lys	Pro	Lys
3830						3835					3840			
Gly	Gly	His	Leu	Cys	Ser	Cys	Ala	Arg	Asn	Phe	Met	Lys	Thr	His
3845						3850					3855			
Asn	Thr	Cys	Lys	Ala	Glu	Gly	Ser	Glu	Tyr	Gln	Val	Leu	Tyr	Ile
3860						3865					3870			
Ala	Asp	Asp	Asn	Glu	Ile	Arg	Ser	Leu	Phe	Pro	Gly	His	Pro	His
3875						3880					3885			
Ser	Ala	Tyr	Glu	Gln	Thr	Phe	Gln	Gly	Asp	Glu	Ser	Val	Arg	Ile
3890						3895					3900			
Asp	Ala	Met	Asp	Val	His	Val	Lys	Ala	Gly	Arg	Val	Tyr	Trp	Thr
3905						3910					3915			
Asn	Trp	His	Thr	Gly	Thr	Ile	Ser	Tyr	Arg	Ser	Leu	Pro	Pro	Ala
3920						3925					3930			
Ala	Pro	Pro	Thr	Thr	Ser	Asn	Arg	His	Arg	Arg	Gln	Ile	Asp	Arg
3935						3940					3945			
Gly	Val	Thr	His	Leu	Asn	Ile	Ser	Gly	Leu	Lys	Met	Pro	Arg	Gly
3950						3955					3960			
Ile	Ala	Ile	Asp	Trp	Val	Ala	Gly	Asn	Val	Tyr	Trp	Thr	Asp	Ser
3965						3970					3975			
Gly	Arg	Asp	Val	Ile	Glu	Val	Ala	Gln	Met	Lys	Gly	Glu	Asn	Arg
3980						3985					3990			
Lys	Thr	Leu	Ile	Ser	Gly	Met	Ile	Asp	Glu	Pro	His	Ala	Ile	Val
3995						4000					4005			
Val	Asp	Pro	Leu	Arg	Gly	Thr	Met	Tyr	Trp	Ser	Asp	Trp	Gly	Asn
4010						4015					4020			

His	Pro	Lys	Ile	Glu	Thr	Ala	Ala	Met	Asp	Gly	Thr	Leu	Arg	Glu
	4025					4030					4035			
Thr	Leu	Val	Gln	Asp	Asn	Ile	Gln	Trp	Pro	Thr	Gly	Leu	Ala	Val
	4040					4045					4050			
Asp	Tyr	His	Asn	Glu	Arg	Leu	Tyr	Trp	Ala	Asp	Ala	Lys	Leu	Ser
	4055					4060					4065			
Val	Ile	Gly	Ser	Ile	Arg	Leu	Asn	Gly	Thr	Asp	Pro	Ile	Val	Ala
	4070					4075					4080			
Ala	Asp	Ser	Lys	Arg	Gly	Leu	Ser	His	Pro	Phe	Ser	Ile	Asp	Val
	4085					4090					4095			
Phe	Glu	Asp	Tyr	Ile	Tyr	Gly	Val	Thr	Tyr	Ile	Asn	Asn	Arg	Val
	4100					4105					4110			
Phe	Lys	Ile	His	Lys	Phe	Gly	His	Ser	Pro	Leu	Tyr	Asn	Leu	Thr
	4115					4120					4125			
Gly	Gly	Leu	Ser	His	Ala	Ser	Asp	Val	Val	Leu	Tyr	His	Gln	His
	4130					4135					4140			
Lys	Gln	Pro	Glu	Val	Thr	Asn	Pro	Cys	Asp	Arg	Lys	Lys	Cys	Glu
	4145					4150					4155			
Trp	Leu	Cys	Leu	Leu	Ser	Pro	Ser	Gly	Pro	Val	Cys	Thr	Cys	Pro
	4160					4165					4170			
Asn	Gly	Lys	Arg	Leu	Asp	Asn	Gly	Thr	Cys	Val	Pro	Val	Pro	Ser
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Gln Cys Pro Pro His Met Thr Gly Pro Arg Cys Gln Glu Gln Val		
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Trp Tyr Lys Arg Arg Val Arg Gly Ala Lys Gly Phe Gln His Gln		
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Pro 530	Val	Lys	Ser	Asp	Ile	Ala 535	Pro	Val	Ala	Arg	Leu 540	Leu	Ile	Tyr	Ala
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ggagatgaca	tcctatgtgc	tcctcgctta	tctcacggcc	cagccagccc	caacctcgga	3720
ggacctgacc	tctgcaacca	acatcgtgaa	gtggatcacg	aagcagcaga	atgcccaggg	3780
cggtttctcc	tccacccagg	acacagtggc	ggctctccat	gctctgtcca	aatatggagc	3840
cgccacattt	accaggactg	ggaaggctgc	acaggtgact	atccagtctt	cagggaacatt	3900
ttccagcaaa	ttccaagtgg	acaacaacaa	tgcctgttta	ctgcagcagg	tctcattgcc	3960
agagctgcct	ggggaataca	gcatgaaagt	gacaggagaa	ggatgtgtct	acctccagac	4020
ctccttgaaa	tacaatatcc	tcccagaaaa	ggaagagttc	ccctttgctt	taggagtgc	4080
gactctgcct	caaacttgtg	atgaacccaa	agcccacacc	agcttccaaa	tctccctaag	4140
tgtcagttac	acagggagcc	gctctgcctc	caacatggcg	atcgttgatg	tgaagatggc	4200
ctctggcttc	attcccctga	agccaacagt	gaaaatgctt	gaaagatcta	accatgtgag	4260
ccggacagaa	gtcagcagca	accatgtctt	gatttacctt	gataagggtg	caaatcagac	4320

actgagcttg ttcttcacgg ttctgcaaga tgtcccagta agagatctca aaccagccat 4380  
 agtgaaagtc tatgattact acgagacgga tgagtttgca atcgctgagt acaatgctcc 4440  
 ttgcagcaaa gatcttggaa atgcttgaag accacaaggc tgaaaagtgc tttgctggag 4500  
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<210> 5  
 <211> 138  
 <212> PRT  
 <213> Homo sapiens

<400> 5

Glu	Glu	Phe	Pro	Phe	Ala	Leu	Gly	Val	Gln	Thr	Leu	Pro	Gln	Thr	Cys
1				5					10					15	
Asp	Glu	Pro	Lys	Ala	His	Thr	Ser	Phe	Gln	Ile	Ser	Leu	Ser	Val	Ser
			20					25					30		
Tyr	Thr	Gly	Ser	Arg	Ser	Ala	Ser	Asn	Met	Ala	Ile	Val	Asp	Val	Lys
		35					40					45			
Met	Val	Ser	Gly	Phe	Ile	Pro	Leu	Lys	Pro	Thr	Val	Lys	Met	Leu	Glu
	50					55					60				
Arg	Ser	Asn	His	Val	Ser	Arg	Thr	Glu	Val	Ser	Ser	Asn	His	Val	Leu
65					70				75						80
Ile	Tyr	Leu	Asp	Lys	Val	Ser	Asn	Gln	Thr	Leu	Ser	Leu	Phe	Phe	Thr
			85					90					95		
Val	Leu	Gln	Asp	Val	Pro	Val	Arg	Asp	Leu	Lys	Pro	Ala	Ile	Val	Lys
			100					105					110		
Val	Tyr	Asp	Tyr	Tyr	Glu	Thr	Asp	Glu	Phe	Ala	Ile	Ala	Glu	Tyr	Asn
		115					120					125			
Ala	Pro	Cys	Ser	Lys	Asp	Leu	Gly	Asn	Ala						
	130					135									

<210> 6  
 <211> 10  
 <212> PRT  
 <213> Homo sapiens

<400> 6

Gly	Gly	Ala	Leu	His	Ile	Tyr	His	Gln	Arg
1				5					10

<210> 7  
 <211> 19  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <223> AH-1 20-mer peptide

<400> 7

Arg	Val	Thr	Tyr	His	Ser	Pro	Ser	Tyr	Val	Tyr	His	Gln	Phe	Glu	Arg
1				5					10					15	



Arg Ala Lys

<210> 8

<211> 1451

<212> PRT

<213> Homo sapiens

<220>

<223> mature alpha-2M sequence

<400> 8

Ser	Val	Ser	Gly	Lys	Pro	Gln	Tyr	Met	Val	Leu	Val	Pro	Ser	Leu	Leu
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His	Thr	Glu	Thr	Thr	Glu	Lys	Gly	Cys	Val	Leu	Leu	Ser	Tyr	Leu	Asn
			20					25					30		
Glu	Thr	Val	Thr	Val	Ser	Ala	Ser	Leu	Glu	Ser	Val	Arg	Gly	Asn	Arg
		35					40					45			
Ser	Leu	Phe	Thr	Asp	Leu	Glu	Ala	Glu	Asn	Asp	Val	Leu	His	Cys	Val
50					55					60					
Ala	Phe	Ala	Val	Pro	Lys	Ser	Ser	Ser	Asn	Glu	Glu	Val	Met	Phe	Leu
65				70						75					80
Thr	Val	Gln	Val	Lys	Gly	Pro	Thr	Gln	Glu	Phe	Lys	Lys	Arg	Thr	Thr
			85					90						95	
Val	Met	Val	Lys	Asn	Glu	Asp	Ser	Leu	Val	Phe	Val	Gln	Thr	Asp	Lys
			100					105					110		
Ser	Ile	Tyr	Lys	Pro	Gly	Gln	Thr	Val	Lys	Phe	Arg	Val	Val	Ser	Met
		115					120					125			
Asp	Glu	Asn	Phe	His	Pro	Leu	Asn	Glu	Leu	Ile	Pro	Leu	Val	Tyr	Ile
130						135					140				
Gln	Asp	Pro	Lys	Gly	Asn	Arg	Ile	Ala	Gln	Trp	Gln	Ser	Phe	Gln	Leu
145					150					155					160
Glu	Gly	Gly	Leu	Lys	Gln	Phe	Ser	Phe	Pro	Leu	Ser	Ser	Glu	Pro	Phe
			165					170						175	
Gln	Gly	Ser	Tyr	Lys	Val	Val	Val	Gln	Lys	Lys	Ser	Gly	Gly	Arg	Thr
			180					185					190		
Glu	His	Pro	Phe	Thr	Val	Glu	Glu	Phe	Val	Leu	Pro	Lys	Phe	Glu	Val
		195					200					205			
Gln	Val	Thr	Val	Pro	Lys	Ile	Ile	Thr	Ile	Leu	Glu	Glu	Glu	Met	Asn
210					215						220				
Val	Ser	Val	Cys	Gly	Leu	Tyr	Thr	Tyr	Gly	Lys	Pro	Val	Pro	Gly	His
225					230					235					240
Val	Thr	Val	Ser	Ile	Cys	Arg	Lys	Tyr	Ser	Asp	Ala	Ser	Asp	Cys	His
			245					250						255	
Gly	Glu	Asp	Ser	Gln	Ala	Phe	Cys	Glu	Lys	Phe	Ser	Gly	Gln	Leu	Asn
			260					265					270		
Ser	His	Gly	Cys	Phe	Tyr	Gln	Gln	Val	Lys	Thr	Lys	Val	Phe	Gln	Leu
		275					280					285			
Lys	Arg	Lys	Glu	Tyr	Glu	Met	Lys	Leu	His	Thr	Glu	Ala	Gln	Ile	Gln
290					295						300				
Glu	Glu	Gly	Thr	Val	Val	Glu	Leu	Thr	Gly	Arg	Gln	Ser	Ser	Glu	Ile
305					310					315					320
Thr	Arg	Thr	Ile	Thr	Lys	Leu	Ser	Phe	Val	Lys	Val	Asp	Ser	His	Phe
			325					330						335	
Arg	Gln	Gly	Ile	Pro	Phe	Phe	Gly	Gln	Val	Arg	Leu	Val	Asp	Gly	Lys
			340				345						350		
Gly	Val	Pro	Ile	Pro	Asn	Lys	Val	Ile	Phe	Ile	Arg	Gly	Asn	Glu	Ala
		355					360					365			

Asn	Tyr	Tyr	Ser	Asn	Ala	Thr	Thr	Asp	Glu	His	Gly	Leu	Val	Gln	Phe
370						375					380				
Ser	Ile	Asn	Thr	Thr	Asn	Val	Met	Gly	Thr	Ser	Leu	Thr	Val	Arg	Val
385					390					395					400
Asn	Tyr	Lys	Asp	Arg	Ser	Pro	Cys	Tyr	Gly	Tyr	Gln	Trp	Val	Ser	Glu
			405						410					415	
Glu	His	Glu	Glu	Ala	His	His	Thr	Ala	Tyr	Leu	Val	Phe	Ser	Pro	Ser
			420					425					430		
Lys	Ser	Phe	Val	His	Leu	Glu	Pro	Met	Ser	His	Glu	Leu	Pro	Cys	Gly
		435					440					445			
His	Thr	Gln	Thr	Val	Gln	Ala	His	Tyr	Ile	Leu	Asn	Gly	Gly	Thr	Leu
450					455						460				
Leu	Gly	Leu	Lys	Lys	Leu	Ser	Phe	Tyr	Tyr	Leu	Ile	Met	Ala	Lys	Gly
465					470					475					480
Gly	Ile	Val	Arg	Thr	Gly	Thr	His	Gly	Leu	Leu	Val	Lys	Gln	Glu	Asp
			485						490					495	
Met	Lys	Gly	His	Phe	Ser	Ile	Ser	Ile	Pro	Val	Lys	Ser	Asp	Ile	Ala
			500					505					510		
Pro	Val	Ala	Arg	Leu	Leu	Ile	Tyr	Ala	Val	Leu	Pro	Thr	Gly	Asp	Val
		515					520						525		
Ile	Gly	Asp	Ser	Ala	Lys	Tyr	Asp	Val	Glu	Asn	Cys	Leu	Ala	Asn	Lys
530					535						540				
Val	Asp	Leu	Ser	Phe	Ser	Pro	Ser	Gln	Ser	Leu	Pro	Ala	Ser	His	Ala
545					550					555					560
His	Leu	Arg	Val	Thr	Ala	Ala	Pro	Gln	Ser	Val	Cys	Ala	Leu	Arg	Ala
			565						570					575	
Val	Asp	Gln	Ser	Val	Leu	Leu	Met	Lys	Pro	Asp	Ala	Glu	Leu	Ser	Ala
			580					585					590		
Ser	Ser	Val	Tyr	Asn	Leu	Leu	Pro	Glu	Lys	Asp	Leu	Thr	Gly	Phe	Pro
		595					600					605			
Gly	Pro	Leu	Asn	Asp	Gln	Asp	Asp	Glu	Asp	Cys	Ile	Asn	Arg	His	Asn
610					615						620				
Val	Tyr	Ile	Asn	Gly	Ile	Thr	Tyr	Thr	Pro	Val	Ser	Ser	Thr	Asn	Glu
625					630					635					640
Lys	Asp	Met	Tyr	Ser	Phe	Leu	Glu	Asp	Met	Gly	Leu	Lys	Ala	Phe	Thr
			645						650					655	
Asn	Ser	Lys	Ile	Arg	Lys	Pro	Lys	Met	Cys	Pro	Gln	Leu	Gln	Gln	Tyr
			660					665					670		
Glu	Met	His	Gly	Pro	Glu	Gly	Leu	Arg	Val	Gly	Phe	Tyr	Glu	Ser	Asp
		675					680					685			
Val	Met	Gly	Arg	Gly	His	Ala	Arg	Leu	Val	His	Val	Glu	Glu	Pro	His
690					695						700				
Thr	Glu	Thr	Val	Arg	Lys	Tyr	Phe	Pro	Glu	Thr	Trp	Ile	Trp	Asp	Leu
705					710					715					720
Val	Val	Val	Asn	Ser	Ala	Gly	Val	Ala	Glu	Val	Gly	Val	Thr	Val	Pro
			725						730					735	
Asp	Thr	Ile	Thr	Glu	Trp	Lys	Ala	Gly	Ala	Phe	Cys	Leu	Ser	Glu	Asp
			740					745					750		
Ala	Gly	Leu	Gly	Ile	Ser	Ser	Thr	Ala	Ser	Leu	Arg	Ala	Phe	Gln	Pro
		755					760					765			
Phe	Phe	Val	Glu	Leu	Thr	Met	Pro	Tyr	Ser	Val	Ile	Arg	Gly	Glu	Ala
770					775						780				
Phe	Thr	Leu	Lys	Ala	Thr	Val	Leu	Asn	Tyr	Leu	Pro	Lys	Cys	Ile	Arg
785					790					795					800
Val	Ser	Val	Gln	Leu	Glu	Ala	Ser	Pro	Ala	Phe	Leu	Ala	Val	Pro	Val
			805						810					815	
Glu	Lys	Glu	Gln	Ala	Pro	His	Cys	Ile	Cys	Ala	Asn	Gly	Arg	Gln	Thr
			820					825					830		
Val	Ser	Trp	Ala	Val	Thr	Pro	Lys	Ser	Leu	Gly	Asn	Val	Asn	Phe	Thr
		835					840					845			
Val	Ser	Ala	Glu	Ala	Leu	Glu	Ser	Gln	Glu	Leu	Cys	Gly	Thr	Glu	Val

850	855	860
Pro Ser Val Pro Glu His Gly Arg Lys Asp Thr Val Ile Lys Pro Leu		
865	870	875
Leu Val Glu Pro Glu Gly Leu Glu Lys Glu Thr Thr Phe Asn Ser Leu		
	885	890
Leu Cys Pro Ser Gly Gly Glu Val Ser Glu Glu Leu Ser Leu Lys Leu		
	900	905
Pro Pro Asn Val Val Glu Glu Ser Ala Arg Ala Ser Val Ser Val Leu		
	915	920
Gly Asp Ile Leu Gly Ser Ala Met Gln Asn Thr Gln Asn Leu Leu Gln		
	930	935
Met Pro Tyr Gly Cys Gly Glu Gln Asn Met Val Leu Phe Ala Pro Asn		
945	950	955
Ile Tyr Val Leu Asp Tyr Leu Asn Glu Thr Gln Gln Leu Thr Pro Glu		
	965	970
Val Lys Ser Lys Ala Ile Gly Tyr Leu Asn Thr Gly Tyr Gln Arg Gln		
	980	985
Leu Asn Tyr Lys His Tyr Asp Gly Ser Tyr Ser Thr Phe Gly Glu Arg		
	995	1000
Tyr Gly Arg Asn Gln Gly Asn Thr Trp Leu Thr Ala Phe Val Leu Lys		
	1010	1015
Thr Phe Ala Gln Ala Arg Ala Tyr Ile Phe Ile Asp Glu Ala His Ile		
1025	1030	1035
Thr Gln Ala Leu Ile Trp Leu Ser Gln Arg Gln Lys Asp Asn Gly Cys		
	1045	1050
Phe Arg Ser Ser Gly Ser Leu Leu Asn Asn Ala Ile Lys Gly Gly Val		
	1060	1065
Glu Asp Glu Val Thr Leu Ser Ala Tyr Ile Thr Ile Ala Leu Leu Glu		
	1075	1080
Ile Pro Leu Thr Val Thr His Pro Val Val Arg Asn Ala Leu Phe Cys		
	1090	1095
Leu Glu Ser Ala Trp Lys Thr Ala Gln Glu Gly Asp His Gly Ser His		
1105	1110	1115
Val Tyr Thr Lys Ala Leu Leu Ala Tyr Ala Phe Ala Leu Ala Gly Asn		
	1125	1130
Gln Asp Lys Arg Lys Glu Val Leu Lys Ser Leu Asn Glu Glu Ala Val		
	1140	1145
Lys Lys Asp Asn Ser Val His Trp Glu Arg Pro Gln Lys Pro Lys Ala		
	1155	1160
Pro Val Gly His Phe Tyr Glu Pro Gln Ala Pro Ser Ala Glu Val Glu		
	1170	1175
Met Thr Ser Tyr Val Leu Leu Ala Tyr Leu Thr Ala Gln Pro Ala Pro		
1185	1190	1195
Thr Ser Glu Asp Leu Thr Ser Ala Thr Asn Ile Val Lys Trp Ile Thr		
	1205	1210
Lys Gln Gln Asn Ala Gln Gly Gly Phe Ser Ser Thr Gln Asp Thr Val		
	1220	1225
Val Ala Leu His Ala Leu Ser Lys Tyr Gly Ala Ala Thr Phe Thr Arg		
	1235	1240
Thr Gly Lys Ala Ala Gln Val Thr Ile Gln Ser Ser Gly Thr Phe Ser		
	1250	1255
Ser Lys Phe Gln Val Asp Asn Asn Asn Arg Leu Leu Leu Gln Gln Val		
1265	1270	1275
Ser Leu Pro Glu Leu Pro Gly Glu Tyr Ser Met Lys Val Thr Gly Glu		
	1285	1290
Gly Cys Val Tyr Leu Gln Thr Ser Leu Lys Tyr Asn Ile Leu Pro Glu		
	1300	1305
Lys Glu Glu Phe Pro Phe Ala Leu Gly Val Gln Thr Leu Pro Gln Thr		
	1315	1320
Cys Asp Glu Pro Lys Ala His Thr Ser Phe Gln Ile Ser Leu Ser Val		
1330	1335	1340

Ser Tyr Thr Gly Ser Arg Ser Ala Ser Asn Met Ala Ile Val Asp Val  
 1345 1350 1355 1360  
 Lys Met Val Ser Gly Phe Ile Pro Leu Lys Pro Thr Val Lys Met Leu  
 1365 1370 1375  
 Glu Arg Ser Asn His Val Ser Arg Thr Glu Val Ser Ser Asn His Val  
 1380 1385 1390  
 Leu Ile Tyr Leu Asp Lys Val Ser Asn Gln Thr Leu Ser Leu Phe Phe  
 1395 1400 1405  
 Thr Val Leu Gln Asp Val Pro Val Arg Asp Leu Lys Pro Ala Ile Val  
 1410 1415 1420  
 Lys Val Tyr Asp Tyr Tyr Glu Thr Asp Glu Phe Ala Ile Ala Glu Tyr  
 1425 1430 1435 1440  
 Asn Ala Pro Cys Ser Lys Asp Leu Gly Asn Ala  
 1445 1450

<210> 9  
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 <212> PRT  
 <213> Homo sapiens

<400> 9

Ser Gly Phe Ser Leu Gly Ser Asp Gly Lys  
 1 5 10

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 <213> Homo sapiens

<400> 10

Gly Ile Ala Leu Asp Pro Ala Met Gly Lys  
 1 5 10

<210> 11  
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 <212> PRT  
 <213> Homo sapiens

<400> 11

Gly Gly Ala Leu His Ile Tyr His Gln Arg  
 1 5 10

<210> 12  
 <211> 11  
 <212> PRT  
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<400> 12

Val Phe Phe Thr Asp Tyr Gly Gln Ile Pro Lys  
 1 5 10